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1997



Communication and  
Adoption Evaluation of

# USDA Water Quality Demonstration Projects

*Executive Summary*

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# Communication and Adoption Evaluation of USDA Water Quality Demonstration Projects

## *Executive Summary*

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October 22, 1997



# Executive Summary

In 1989, the U.S. Department of Agriculture (USDA) and its state and local cooperators launched a Water Quality Program, including Water Quality Demonstration Projects in 16 states across the Nation. The demonstration projects were located in multi-county areas with agriculturally related water quality risks and problems. The projects have been jointly conducted by Cooperative Extension, the Natural Resources Conservation Service, and the Farm Service Agency.

The demonstration projects were designed to *accelerate voluntary adoption* of agricultural best management practices (BMPs) that protect surface water and groundwater, while maintaining farm and ranch productivity and profitability. This evaluation of the eight 1990-initiated projects rates their *early performance in accelerating* the process of producer adoption of designated BMPs. The evaluation points to recommendations at the state project level and the USDA national program level.

## Recommendations for State Water Quality Projects

- Use comprehensive models, such as those used by this evaluation, to help select project objectives, strategy, structure, methodology, and resources.
- Conduct adaptive, site-specific research/test demonstrations as needed to assure or improve local applicability of project-promoted BMPs.
- Use basic marketing and promotional tools to improve program design, execution, and accountability.
- Segment the audience according to their goals and assessments of water quality problems and BMPs to increase project effectiveness and efficiency.

- Define measurable project objectives within a national program framework.
- Integrate and focus project budgets to achieve project objectives.

## Recommendations for Water Quality Programs of USDA Agencies

- Provide clear and timely definition of the purpose and nature of water quality projects.
- Be open to conducting or funding site-specific, adaptive research/test demonstrations in projects designed to accelerate producer adoption of water quality BMPs.
- Coordinate USDA in-house and extramural project funding to achieve consistency of timing of funding for state interagency project partners.
- Recognize and communicate realistic time periods for the conduct and funding of water quality projects according to project purpose and nature.

## Evaluation Approach

Focus was on *how quickly* agricultural producers modified project-promoted practices (BMPs), through measuring producer adoption processes between early 1992 and early 1994. This period may be defined as the first two years of full implementation of the demonstration projects.

Of the several BMPs promoted by each demonstration project, three or four among those given highest priority were designated for tracking by this evaluation. A total of 13 different BMPs was designated across the eight projects, with some of the same BMPs selected within several projects. Each designated BMP (duplicated or unduplicated) counted as a "BMP case." A

total of up to 28 BMP cases is included in the analyses performed for this evaluation.

Project effectiveness at the *demonstration area ("watershed") level* was evaluated through use of quasi-experimental evaluation design and analysis. This design compared producer adoption processes in seven, of the eight, demonstration project areas with those in matched comparison areas. Comparison areas are located nearby the demonstration areas but were not part of the demonstration projects. Representative samples of producers were surveyed through a baseline survey early in 1992 and a final survey early in 1994, both in the demonstration areas and the comparison areas.

Project effectiveness at the *individual producer level* was evaluated through use of cross-sectional evaluation design and analysis. Characteristics of individual producers both in the demonstration areas and comparison areas were correlated with their adoption process statuses at end of 1993/beginning of 1994.

## Baseline Findings

The baseline survey early in 1992 found that nearly all producers recently had been exposed to information about what they can do to protect water quality, and nearly half viewed water pollution as serious in their own state. However, *fewer than 10 percent of producers saw water pollution as a serious problem close to their own farms. More than 50 percent believed farm practices have no impact on water quality in their respective communities.*

On average, three-quarters of producers across the eight sites already were aware of the designated BMPs tracked by this evaluation, and most

producers said they were already moderately familiar with these BMPs.

Among producers who were aware of the designated BMPs, *a majority were unconvinced* of the profitability, practicality, and/or water quality benefits of more than half the designated BMP recommendations of the projects. Regarding those specific, project-promoted BMPs rated favorably by an overall majority of producers, sizable minorities of producers in some of the eight sites lacked assurance of the profitability and/or practicality of several of these BMPs.

Across the eight sites, an average of about 25 percent of the producers *already were using* the designated BMPs (the 1992 baseline survey retrospectively measured BMP use during 1991).

## Project Efforts and Producer Reactions

The projects allocated significant resources to demonstrate and/or test the local applicability of generally-recommended practices. Need for these field demonstrations was due partly to the lack of local data to support claims of BMP economic and/or environmental cost-effectiveness compared with conventional practices. The majority of projects each recruited and worked with between 30 and 60 cooperators. These recruited producers helped to select field demonstration methods and evaluate the costs and performance of recommended practices that were tested on their respective farms. Some of the projects waited for data from their field demonstrations before fully implementing their information transfer and education efforts.

One-on-one communication between project staff and producer audiences was the method of education most emphasized, being preferred by both project staff and producers. Group events—e.g., demonstration tours, field days, and work-

shops—were conducted several times annually by each project. Group methods were supplemented by extensive use of local mass media (mostly newspaper and radio coverage) and controlled media (e.g., project newsletters).

The projects had gained, on average, *awareness and positive recognition* by *nearly half the producers* across the demonstration areas by early 1994.

## Findings Concerning Area Adoption Processes

Demonstration area producers, as a whole, from early 1992 to early 1994:

- *did not* change their views about the seriousness of water quality problems nor about the impacts of farm practices on these problems, and neither did they seek more information about water quality practices overall;
- *did not* increase their overall exposure to information concerning what producers can do to protect water quality, nor the attention they paid to such information;
- *did* become more *aware*—with statistical significance—of six (21 percent) of 28 BMP cases (producer awareness of most of the BMP cases increased measurably);
- *did* become more *familiar*—significantly so—with eleven (40 percent) of these cases (producer familiarity with most of the BMP cases increased measurably);
- *did not* significantly change their assessments of—i.e., become more favorable toward—any of the cases; and
- *did* report increased usage—with statistical significance—of five (19 percent) of 26 BMP cases by the end of 1993 (for BMP usage, the early 1994 survey obtained data for 1993). Producer usage of less than half the BMPs increased measurably.

Among those BMP cases showing statistically significant gains during 1992–1993, producers' BMP awareness, familiarity, and/or usage

increased by 5 to 25 percentage points, with a median increase of 15 percentage points.

Virtually *no net gains* in producer adoption processes in the demonstration areas were found relative to those in the comparison areas. Producers made *similar amounts of gain* in BMP awareness, familiarity, and usage *in the comparison areas*.

The lack of finding *net gains* by demonstration area producers over comparison area producers *prevents a conclusion* that the projects significantly influenced (i.e., accelerated) BMP adoption processes in the demonstration areas by close of 1993/beginning of 1994. The similar gains found in the comparison areas may have been due *primarily* to the *vast, strong agricultural information and communication systems in the eight sites*. These systems include transfer of information from producers already using the project-promoted BMPs to other producers, as well as extensive, in-depth commercial farm magazine coverage of BMPs.

An overall inference based on the above findings is as follows: information about the project-promoted BMPs was sufficiently similar and pervasive across the demonstration areas and comparison areas *to mask any demonstration project impacts* on BMP adoption processes during 1992–1993.

## Findings Concerning Individual Adoption Processes

The following findings pertain to individual producers across both demonstration areas and comparison areas by early in 1994.

Producers were asked whether, during 1993, they had *received and paid attention to information* about specific BMPs that were being promoted by the project in their respective area. Those producers who had done so were significantly more:

aware of these specific BMPs in 53 percent of the 19 applicable BMP cases; familiar with the BMPs in 95 percent of these cases; and likely to be users of the BMPs in 53 percent of these cases. Although encouraging, these findings do not identify the channels from which producers received information about the project-promoted BMPs.

It is questionable whether information received directly from demonstration project activities had an important influence on BMP adoption processes by close of 1993/early 1994. Producers who were aware of their area's demonstration project were not more likely to have received/paid attention to 1993 information about specific BMPs promoted by the project.

That is, producers who, by early 1994, were aware of their area's demonstration project were no more likely to recall recently hearing, reading, or paying attention to information about the project's BMPs than those producers unaware of the project. A positive statistical association between project awareness and such information receipt/attention would be expected if a significant amount of the information that producers received in 1993 about project-promoted BMPs had come directly from project activities. BMP information from the projects could have been transferred indirectly to area producers through non-project channels.

A multi-variate analysis indicates that neither a producer's farm location in a demonstration area, nor awareness of the demonstration project in their area, were significant predictors of 1993 usages of two of the 13 designated BMPs. Data on producer usages of two of the project-promoted BMPs, i.e., legume crediting and manure crediting, met statistical requirements for multi-variate analysis across the demonstration areas and

the comparison areas.

Producers' annual gross income, as well as assessments of these two BMPs' "practicality" and "simplicity" and degree of attention paid to information recently received about them were the leading predictors of their 1993 usages. Producers' differential receptivity to information generally available about these BMPs appears to have been more important in determining their 1993 usage than the additional BMP information made available by the projects.

### Further Findings, Discussion, and Implications

Producers who had, in 1993, received/paid attention to information about specific, project-promoted BMPs were more likely to be familiar with these BMPs than to assess them favorably. First, such producers tended to have higher than average familiarity with 95 percent of BMP cases, as compared with higher than average favorableness toward: only eight percent of BMP cases—regarding their ease of usage; 50 percent of BMP cases—regarding their profitability, and; 75 percent of the cases—regarding their practicality of use.

Second, by early 1994, a majority of producers continued to lack assurance of the profitability, practicality, and/or water quality benefits of more than half the designated BMP recommendations of the projects. Producers' lack of an increase in favorableness toward the BMPs may have been the primary factor limiting their 1992–1993 adoption of the BMPs promoted by the demonstration projects.

A possible explanation for the lack of an increase in producers' favorableness toward the BMPs is the following: by the end of 1993, it is unlikely that most projects had been able to accumulate sufficient local data to ver-

ify, both for some project staff and area producers, the site-specific economic and environmental benefits of using, and the feasibility of using, the project-promoted BMPs.

According to prior program experience, theory of adoption of innovations, and views of demonstration project staff—local validation of the profitability and practicality of recommended management practices generally is needed to convince producers to try using them to a significant degree. Future projects may need to use on-farm, adaptive research to test local adaptations of available research results. Such site-specific test demonstrations may be needed to find ways to increase producers' favorableness toward some generally recommended BMPs.

The voluntary adoption of environmentally-sound agricultural practices generally is a slow process. Research and agricultural reporting show that rates of producer adoption of practices that emphasize conservation and environmental protection tend to be slower than the rates of adoption of technologies and practices that are primarily production/efficiency/market driven. This latter category generally is more economically advantageous to producers.

Evaluations of future USDA water quality projects will need more streamlined administration, increased interaction between evaluation staff and project staffs, increased precision of project objectives, and reassessment of techniques for evaluation management and implementation.

## Acknowledgements

*Funding for this evaluation was provided by the Office of the Under Secretary for Research, Education, and Economics (REE), U. S. Department of Agriculture (USDA). Both funding and technical support were provided by USDA's Cooperative State Research, Education, and Extension Service (CSREES); Natural Resource Conservation Service (NRCS), and; Economic Research Service (ERS). USDA funding was transmitted to the University of Wisconsin through CSREES (Cooperative Agreement Nos. 90-EXCA-3-0998 and 95-EXCA-3-0377).*

*Technical and in-kind support for the evaluation was supplied by the USDA Farm Service Agency, as well as by staff members of the eight Demonstration Projects assessed. The Cooperative Extension Division,*

*University of Wisconsin-Extension, provided in-kind as well as financial support for the evaluation.*

The views presented in this document are not necessarily those of the university reviewers, the water quality program staffs of USDA and state and county cooperators, USDA evaluation staffs, or the USDA agencies that supported this evaluation. The content of this evaluation report is the sole responsibility of the authors.

This report summarizes and builds upon tandem background reports with the following citation: Peter J. Nowak, Garrett J. O'Keefe, Susan S. Anderson, Craig Trumbo, Julie Runch, Robert McCallister, and Douglas Jackson-Smith. 1996. *Producer Adoption Evaluation of USDA Water Quality Projects Technical Reports: Volume One—Background, Context, Design, and*

*Baseline Results; Volume Two—Evaluation Results.* Madison, WI: University of Wisconsin in cooperation with U.S. Department of Agriculture's Cooperative State Research, Education, and Extension Service; Economic Research Service; Farm Service Agency; and Natural Resource Conservation Service.

Copies of the above Technical Reports are available, in limited quantity as long as copies last, from: Department of Agricultural Journalism, University of Wisconsin, Madison, WI 53706.

Copies of this *Executive Summary* and the *Report of the Evaluation* are available as long as copies last, from: Plant and Animal Science Production, Protection, and Processing, CSREES/USDA, Washington, D.C. 20250-2220.

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